

1600

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/545,199D

DATE: 10/22/2001
TIME: 16:53:01

Input Set : A:\6227.txt
Output Set: N:\CRF3\10222001\I545199D.raw

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3 <110> APPLICANT: Lowery E., David
4     Fuller E., Troy
5     Kennedy J., Michael
7 <120> TITLE OF INVENTION: Anti-Bacterial Vaccine Compositions
9 <130> FILE REFERENCE: 28341/6227.1
11 <140> CURRENT APPLICATION NUMBER: 09/545,199D
12 <141> CURRENT FILING DATE: 2000-04-06
14 <150> PRIOR APPLICATION NUMBER: 60/153,453
15 <151> PRIOR FILING DATE: 1999-09-10
17 <150> PRIOR APPLICATION NUMBER: 60/128,689
18 <151> PRIOR FILING DATE: 1999-04-09
20 <160> NUMBER OF SEQ ID NOS: 169
22 <170> SOFTWARE: PatentIn Ver. 2.0

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**Does Not Comply
 Corrected Diskette Needed**

ERRORED SEQUENCES

PS

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1992 <210> SEQ ID NO: 16
1993 <211> LENGTH: 2110
1994 <212> TYPE: PRT
1995 <213> ORGANISM: Pasteurella multocida
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2002       20          25          30
2004 Glu Arg Ser Val Tyr Asn Ile Gly Asp Ile Tyr Ala Ser Lys Lys Leu
2005       35          40          45
2007 Thr Val His Thr His Asn Leu Ile Asn Asp Val Arg Leu Ser Gly Asn
2008       50          55          60
2010 Val Ser Tyr Lys Pro Ile Gly Ser Ser Arg Asp Tyr Asp Ile Ser Arg
2011       65          70          75          80
2013 Val Ala Val His Gly Trp His Asn Asn Val Tyr Lys Leu Asn Leu Asn
2014       85          90          95
2016 Leu Gln Glu Gln Asp Lys Thr Asp Ile Lys Val Val Lys Met Gly Ala
2017       100         105         110
2019 Ile Arg Ser Asp Gly Asp Phe Asp Phe Lys Gly Ile Lys Ala Thr Ser
2020       115         120         125
2022 Ser Glu Ser Lys Pro Gln Leu Ile Asn His Gly Leu Ile Asn Val Lys
2023       130         135         140
2026 Gly Thr Phe Asn Ala Glu Ala Asp Gln Val Val Asn Gln Met Lys Ala
2027       145         150         155          160
2029 Phe Asn Gln Asn Ala Leu Ala Ser Val Phe Lys Asn Pro Ala Lys Ile
2030       165         170         175
2032 Thr Met Tyr Tyr Gln Pro Leu Thr Arg Tyr Ile Trp Thr Pro Leu Ser
2033       180         185         190
2035 Gly Asn Ala Ser Arg Glu Phe Asn Asn Leu Glu Ser Phe Leu Asp Ala

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2036	195	200	205
2038	Leu Phe Gly Ser Thr Thr Ile Leu Lys Ser Ser Phe Tyr Ser Thr Glu		
2039	210	215	220
2041	Asn Phe Ser Ala Tyr Gln Leu Leu Ser His Ile Gln His Ser Pro Met		
2042	225	230	235
2044	Tyr Gln Lys Ala Met Ala Gln Val Phe Gly Ala Glu Trp His Ser Lys		
2045	245	250	255
2047	Ser Tyr Asp Glu Met Arg Asn Lys Trp Lys Ser Phe Lys Glu Asn Pro		
2048	260	265	270
2050	Thr Asp Phe Ile Tyr Tyr Pro Ser Glu Lys Ala Lys Ile Leu Ala Gly		
2051	275	280	285
2053	Lys Leu Glu Gly Lys Leu Thr Thr Leu Gln Asn Gly Glu Tyr Ala Glu		
2054	290	295	300
2056	Arg Gly Lys Phe Asp Glu Ser Ile Gln Ile Gly Lys His Gln Leu Ser		
2057	305	310	315
2059	Leu Pro Ser Val Glu Leu Lys Ala Glu Phe Ser Asp Lys Glu Arg Leu		
2060	325	330	335
2062	Glu Glu Asp Gly Val Asp Leu Ser Ser Ile Ala Glu Leu Leu Glu Met		
2063	340	345	350
2065	Pro Asn Leu Phe Ile Asp Asn Ser Ile Gln Leu Glu Lys Lys Lys Leu		
2066	355	360	365
2068	Ser Pro Ile Glu Asp Leu Asp Glu Glu Pro Arg Lys Asn Leu Asp Ile		
2069	370	375	380
2071	Glu Glu Ser His Ser Asn Ser Ser Asp Asp Val Leu Ser Met Asn Asp		
2072	385	390	395
2074	Asp Glu Ser Asp Thr Asp Asp Ser Lys Trp Ser Met Gly Asn Asp Glu		
2075	405	410	415
2077	Lys Glu Met Pro Asp Asp Lys Leu Gly Ile Ser Arg Asp Asp Arg Gly		
2078	420	425	430
2080	Asn Lys Pro Pro Arg Thr Asp Pro Thr Val Asp Tyr Leu Asn Pro Asp		
2081	435	440	445
2083	Glu Phe Phe Glu Asn Gly Tyr Leu Leu Asn Glu Leu Leu Gln Glu Leu		
2084	450	455	460
2087	Gly Glu Glu Pro Leu Leu Lys Glu Gly Glu Asp His Phe Lys Arg Ser		
2088	465	470	475
2090	Thr Asn Leu Val Arg Leu Gly Glu Arg Asp Arg Gln Asn Arg Glu Lys		
2091	485	490	495
2093	Arg Glu Lys Glu Gly Tyr Phe Asp Leu Pro Gly Thr Leu Asp Met Lys		
2094	500	505	510
2096	Leu Gln Glu Leu Phe Glu Lys Arg Lys Gln Lys His Glu Ala Glu Gln		
2097	515	520	525
2099	Lys Ala Arg Ile Glu Lys Ala Leu Leu Gln Lys Ser Glu Gln Gln Glu		
2100	530	535	540
2102	Lys Arg Val Glu Glu Arg Lys Gln Glu Glu Lys Arg Gln Ala Gln Asp		
2103	545	550	555
2105	Lys Ile Ala Lys Gln Val Glu Ile Ala Lys Glu Met Gln Arg Val Glu		
2106	565	570	575
2108	Glu Ile Arg Gln Arg Glu Lys Gln Leu Ala Ile Gln Leu Gln Glu Glu		
2109	580	585	590

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2111 Glu Lys Lys Gln Gln Glu Lys His Leu Ser Glu Glu Lys Lys Gln
 2112 595 600 605
 2114 Ala Glu Gln Lys Gln Lys Ala Glu Glu Lys Val Ala Gln Glu Arg Leu
 2115 610 615 620
 2117 Asp Ile Glu Gln Gln Lys Ala Tyr Glu Glu Met Ala Lys Arg Glu Ala
 2118 625 630 635 640
 2120 Glu Ala Ser Lys Asn Val Leu Leu Lys Ala Ile Asp Glu Glu Arg Pro
 2121 645 650 655
 2123 Lys Val Glu Thr Asp Pro Leu Phe Arg Thr Lys Leu Lys Tyr Ile Asn
 2124 660 665 670
 2126 Gln Asp Asp Tyr Ala Gly Ala Asn Tyr Phe Phe Asn Lys Val Gly Leu
 2127 675 680 685
 2129 Asn Thr Lys Gly His Gln Lys Val Asn Val Leu Gly Asp Asn Tyr Phe
 2130 690 695 700
 2132 Asp His Gln Val Ile Thr Arg Ser Ile Glu Lys Lys Val Asp Asn His
 2133 705 710 715 720
 2135 Leu Asn Gln Lys Tyr Asn Leu Ser Asp Val Glu Leu Val Lys Gln Leu
 2136 725 730 735
 2138 Met Asp Asn Ser Thr Thr Gln Ala Gln Glu Leu Asp Leu Lys Leu Gly
 2139 740 745 750
 2141 Ala Ala Leu Thr Lys Glu Gln Gln Ala Asn Leu Thr Gln Asp Ile Val
 2142 755 760 765
 2144 Trp Tyr Val Lys Thr Lys Val Lys Gly Lys Asp Val Phe Val Pro Lys
 2145 770 775 780
 2148 Val Tyr Phe Ala Ser Glu Thr Leu Val Glu Ala Gln Lys Leu Gln Gly
 2149 785 790 795 800
 2151 Leu Gly Thr Gly Thr Ile Arg Val Gly Glu Ala Lys Ile Lys Ala Lys
 2152 805 810 815
 2154 Asp Val Val Asn Thr Gly Thr Leu Ala Gly Arg Lys Leu Asn Val Glu
 2155 820 825 830
 2157 Ala Ser Asn Lys Ile Lys Asn Gln Gly Ser Ile Leu Ser Thr Gln Glu
 2158 835 840 845
 2160 Thr Arg Leu Val Gly Arg Lys Gly Ile Glu Asn Val Ser Arg Ser Phe
 2161 850 855 860
 2163 Ala Asn Asp Glu Leu Gly Val Thr Ala Gln Arg Ser Glu Ile Lys Thr
 2164 865 870 875 880
 2166 Glu Gly His Leu His Leu Glu Thr Asp Lys Asp Ser Thr Ile Asp Val
 2167 885 890 895
 2169 Gln Ala Ser Asp Ile Lys Ala Lys Thr Ser Phe Val Lys Thr Gly Asp
 2170 900 905 910
 2172 Val Asn Leu Lys Asn Thr Tyr Asn Thr Lys His Ala Tyr Arg Glu Lys
 2173 915 920 925
 2175 Phe Ser Pro Ser Ala Leu Gln Val Ala Glu Leu Asp Val Ala Gly Leu
 2176 930 935 940
 2178 Lys Val Pro Leu Leu Gly Val Ser Ser Pro Ser Ser Tyr Ser Glu His
 2179 945 950 955 960
 2181 Thr Ser Glu Ala Thr Ser Glu Gly Ser Ile Phe Glu Val Gly His Leu
 2182 965 970 975
 2184 His Leu Ala Val Asp Arg Asp Val Asn Gln Ala Gly Ser Lys Ile Lys

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2185	980	985	990
2187	Ala Lys Tyr Thr Thr Gly Val Val Lys Gly Asn Phe Asn Thr Glu Ala		
2188	995	1000	1005
2190	Gly Lys Asn Ile Lys His Val Glu Lys Glu Glu Tyr Ser Ser Gln Leu		
2191	1010	1015	1020
2193	Phe Ala Ser Ala His Ala Ser Gly Gly Thr Ser Val Arg Tyr Asp		
2194	1025	1030	1035
2196	Tyr Asn Ser Gln Asp Gly Gly Asn Ala Ser Val Gly Val Pro Thr Asn		
2197	1045	1050	1055
2199	His Thr Gly Val Gly Ala Glu Ala Gly Met Ser Phe Thr His Thr Lys		
2200	1060	1065	1070
2202	Asp Lys Glu Thr Leu Leu Thr His Thr Asn Ser Glu Leu Gln Val Lys		
2203	1075	1080	1085
2205	His Gly Lys Leu His Val Leu Gly Tyr Ala Asp Ile Gly Gly Val Asp		
2206	1090	1095	1100
2209	Ile Asn Thr Lys Leu Pro Glu Asp Ala Gln Ser Lys Ala Gln Lys Glu		
2210	1105	1110	1115
2212	Ile Ala Ala Ser Lys Pro Glu Lys Thr Glu Gln Ser Ala Gln Asp Val		
2213	1125	1130	1135
2215	Ala Gln Ala Gln Ser Asn Ala Asn Lys Asp Lys Glu Asn Lys Ala Pro		
2216	1140	1145	1150
2218	Glu Ile Lys Glu Leu Ser Glu Ala Glu Ile Ala Asp Leu Met Ser Glu		
2219	1155	1160	1165
2221	Lys Ser Lys Ala Tyr Phe Asp Asp Phe Ala Glu Gln Ala Lys Lys Ala		
2222	1170	1175	1180
2224	Pro Glu Asn Asn Arg Phe Glu Leu Ser Ala Lys Glu Ile Lys Ser Ser		
2225	1185	1190	1195
2227	Lys Gln Lys Asp Gln Tyr Asp His Glu Ser Glu Arg Thr Thr Phe Lys		
2228	1205	1210	1215
2231	Val Gly Pro Glu Ala Glu Ala His Ser Ala Val Ala Asp Met Val Ser		
2232	1220	1225	1230
2234	His Leu Val Lys Glu Tyr Arg Asp Ala Gln Asn Gly Thr Lys Gln Asp		
2235	1235	1240	1245
2237	Gly Thr Val Ala Leu Gln His Ala Ser Asp Val Leu Asn Ile Val Thr		
2238	1250	1255	1260
2240	Gly Asp Leu Ala Gly Ser Ser Ala Lys Leu Ser Val Glu Arg Thr His		
2241	1265	1270	1275
2243	Glu Thr Lys Arg Thr Thr Glu Thr Gly Asp Ile Val Thr Lys Ile Gly		
2244	1285	1290	1295
2246	Gly Asn Val Thr Leu Ser Ala Arg Ser Gly Ser Val Asn Leu Lys Asn		
2247	1300	1305	1310
2249	Val Gln Ser Asp Glu Gln Ala Asn Leu Thr Leu Arg Ala Lys Glu Asp		
2250	1315	1320	1325
2252	Val Asn Val Leu Ser Gly Glu Lys Thr Arg Glu Thr Thr Glu Thr Val		
2253	1330	1335	1340
2255	Ser Arg Gln Lys Leu Ser His Gly Val Asn Ala Gly Cys Ser Met Met		
2256	1345	1350	1355
2258	Ser Gly Ala Cys Thr Ala Gly Val Ser Thr Ser Leu Glu Gly Asn Glu		
2259	1365	1370	1375

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2261 Ser Tyr Thr Ser Glu Arg Glu Thr Ala Gln Asn Asn Ser Phe Leu Lys
 2262 1380 1385 1390
 2264 Ala Arg Asn Met Lys Val Glu Ala Gly Arg Asp Phe Asn Val Val Ser
 2265 1395 1400 1405
 2267 Ser Asn Ile Asp Ala Asp Lys Leu Asp Leu His Val Lys Gly Lys Thr
 E--> 2268 <1410 1415 1420
 2270 Asn Val Val Ser Lys Gln Asp Thr Leu Gln Lys Val Thr His Gly Val
 2271 1425 1430 1435 1440
 2273 Asp Tyr Asn Leu Ser Ala Gly Val Ala Leu Ser Ser Ala Thr Ile Ala
 2274 1445 1450 1455
 2276 Thr Pro Thr Gly Asn Val Gly Phe Gly Tyr Thr Asn Glu Thr Glu Ser
 2277 1460 1465 1470
 2279 Lys Arg Thr Val Asn Gln Gln Ala Gly Ile Lys Ala Asn Lys Ile Thr
 2280 1475 1480 1485
 2282 Gly Gln Thr His Asp Leu Asn Leu Glu Gly Gly Tyr Leu Val Ser Asn
 2283 1490 1495 1500
 2285 Asp Lys Asp Asn Gln Leu Lys Val Thr Gly Asp Val Thr Thr Lys Ala
 2286 1505 1510 1515 1520
 2288 Leu His Asp Gln His Asp Lys Asp Gly Gly Thr Phe Gly Leu Ser Val
 2289 1525 1530 1535
 2291 Gly Ile Ser Glu Arg Gly Thr Thr Ala Phe Asn Val Arg Gly Gly Arg
 2292 1540 1545 1550
 2294 Ala Glu Gln Lys His Tyr Asn Ala Thr Gln Lys Ser Thr Leu Ser Gly
 2295 1555 1560 1565
 2297 Val Asp Thr Ser Gln Ala Asn Val Ser Gly Gln Val Asn Thr Asp Leu
 2298 1570 1575 1580
 2300 Thr Lys Ala Lys Ala Val Thr Arg Asp Asp Thr Tyr Ala Ser Thr Gln
 2301 1585 1590 1595 1600
 2303 Phe Ser Phe Glu Val Ala Asp Ile Val Glu Leu Gly Gln Arg Ala Lys
 2304 1605 1610 1615
 2306 Asn Lys Leu Ser Ala Pro Asn Asn Asp Thr Asp Met Ala Ser Gly Ser
 2307 1620 1625 1630
 2309 Thr Leu Arg Ser Arg Ser Thr Thr Glu Glu Ala Asp Val Pro Thr Thr
 2310 1635 1640 1645
 2312 Arg Ser Arg Val Thr Asp Glu Ala Asp Ser Val Ser Val Lys Asn Pro
 2313 1650 1655 1660
 2315 Ile Tyr Glu Ser Ala Asp Ala Val Val Pro Thr Pro Arg Ser Arg Asn
 2316 1665 1670 1675 1680
 2318 Val Asp Ser Thr Asp Leu Val Asp Asn Pro Leu Tyr Ala Ser Ala Thr
 2319 1685 1690 1695
 2321 Thr Lys Ala Asn Ile His Asp Tyr Glu Glu Ile Pro Ala Val Tyr Ser
 2322 1700 1705 1710
 2324 Lys Val Gly Asp Asn Asn Ala Asp Leu Val Arg His Lys Thr Ala Thr
 2325 1715 1720 1725
 2327 Ser Asp Glu His Leu Tyr Ala Glu Ile Asn Glu Pro Thr Tyr Ser Arg
 2328 1730 1735 1740
 2331 Val Gly Asp Lys Asn Ala Asp Met Arg Arg His Asn Ala Ala Gly Thr
 2332 1745 1750 1755 1760
 2334 Thr Asp Tyr Ala Asp Val Val Gln Ala His Thr Arg Lys Ala Asp Asp

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2335	1765	1770	1775
2337	Pro Leu Pro Ala Leu Pro Asn Gln Gly Lys Ala Arg Thr Val Asn Asp		
2338	1780	1785	1790
2340	Gly Ser Glu His Ile Tyr Thr Asp Ile Ser Asp Val Gly Thr Gln Thr		
2341	1795	1800	1805
2343	Lys Ala Ile Asp Ser Thr Tyr Ala Thr Val Gly Met Pro Lys Ala Asn		
2344	1810	1815	1820
2346	Ala Val Asn Leu Ile Gly Gln Asn Gly Leu Gly Ser Ile Tyr His Ser		
2347	1825	1830	1835
2349	Pro Asp Ser Ala Tyr Lys Thr Trp Gln Leu Leu Asp Gln Phe Ala Asn		
2350	1845	1850	1855
2352	Lys Gly Gly Asp Ala Val Phe Leu Arg Pro Ala Thr Glu Met Lys Cys		
2353	1860	1865	1870
2356	Ala Gly Ala Pro Leu Lys Tyr Thr Phe Ile Val Arg Asp Tyr Leu Leu		
2357	1875	1880	1885
2359	Arg Arg His Thr Leu Asp Lys Ser Arg Leu Phe Tyr Asn Ala His Asn		
2360	1890	1895	1900
2362	Lys Thr Leu Phe Ser Val Pro Ile Val Asp Ala Lys Val Lys Met Leu		
2363	1905	1910	1915
2365	Phe Ala Glu Lys Asn Ile Gln Val Asn Tyr Asp Arg Ser Leu Thr Ala		
2366	1925	1930	1935
2368	Ile Asp Leu Ser Lys Arg Ile Ala Thr Phe Asn Ser Pro Glu Gly Val		
2369	1940	1945	1950
2371	Val Glu Val Pro Tyr Asp Phe Ile Asn Val Val Pro Pro Met Arg Ala		
2372	1955	1960	1965
2374	Pro Asp Ala Val Arg Gln Ser Ala Leu Ala Trp Gln Glu Gly Lys Trp		
2375	1970	1975	1980
2377	Ala Asn Asp Gly Trp Val Glu Val Glu Lys His Thr Leu Arg His Arg		
2378	1985	1990	1995
2380	Arg Tyr Ala Asn Val Phe Ala Val Gly Asp Val Ala Gly Val Pro Lys		
2381	2005	2010	2015
2383	Gly Lys Thr Ala Ala Ser Val Lys Trp Gln Val Pro Val Ala Val Ala		
2384	2020	2025	2030
2386	His Leu Leu Ala Glu Leu Glu Gly Lys Pro Cys Asp Glu Ile Tyr Asn		
2387	2035	2040	2045
2389	Gly Tyr Thr Ser Cys Pro Leu Ile Thr Gln Leu Gly Lys Gly Met Leu		
2390	2050	2055	2060
2392	Val Glu Phe Asp Tyr Asn Asn His Leu Thr Pro Ser Phe Pro Gly Val		
2393	2065	2070	2075
2395	Ile Ala Pro Leu Glu Glu Leu Trp Ala Thr Trp Ala Ile Lys Thr Leu		
2396	2085	2090	2095
2398	Gly Leu Lys Pro Thr Tyr Leu Gly Met Leu Arg Gly Leu Ala		
2399	2100	2105	2110

VERIFICATION SUMMARY
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DATE: 10/22/2001
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Input Set : A:\6227.txt
Output Set: N:\CRF3\10222001\I545199D.raw

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L:2268 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:16
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L:5415 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35
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L:5726 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:38
L:5738 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:38
L:5856 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39
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L:9357 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:72
L:11241 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:90
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L:11976 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102
L:11977 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102
L:12304 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:103